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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,347	01/28/2004	Dennis Cleary	1052.045	3309

79306 7590 05/22/2008

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EXAMINER	
GUARINO, RAHEL	

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
05/22/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/766,347	CLEARY ET AL.	
	Examiner	Art Unit	
	RAHEL GUARINO	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-7,9,10,12-15,15,18-20* is/are rejected.

7)☒ Claim(s) *3,8,11,16,17 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. This office action is in response to communication filed on 2/21/2008. Claims 20 and 21 have been added and Claims 1-21 and are pending on this application.

2. Applicant's arguments filed 2/21/2008 have been fully considered but they are not persuasive.

The following is the examiner's response to the applicant's argument:

Applicant's argument:

Re claims 1 and 9

a) Significantly, however, Brueske does not teach or even suggest a controller that controls a variable attenuator based on the amplitude of a spread-spectrum signal prior to an interference-compensation filter.

b) First of all, Younis does not teach a digital signal processor for de-spreading a filtered digital spread-spectrum signal to generate a de-spread digital signal.

Re (new) claim 20

Support for new claim 20 is found, for example, in original claim 4 and on page 4, lines 12-14, of the Specification. None of the cited references teaches or even suggests the combination of features of new claim 20. As such, the Applicant submits that this

provides additional reasons for the allowability of new claim 20 over the cited references.

Re (new) claim 21

According to new claim 21, the attenuation determination is further based on a priori knowledge of maximum expected interference-to-carrier ratio. Support for new claim 21 is found, for example, on page 6, lines 19-22, of the Specification. None of the cited references teaches or even suggests the combination of features of new claim 21.

Examiner's answer

Re claims 1 and 9

a) Brueske discloses a controller (AGC (307)) that adjusts dynamically (variable attenuator) the output signals (I and Q) from the (A/D) converter (319 and 321) before the digital filters (323,325). Furthermore, it is well known in the art that the gain controller adjusts the amplitude (gain) of the input signal based on the amplitude of the sampled signals (output signals from the A/D converters).

b) Younis discloses a digital signal processor (demodulator (1250)) that demodulates the signal according to the modulation format (col. 7 lines 20-24), which includes CDMA format (col. 8 lines 26-31). Figure 3 teaches a dual-mode CDMA receiver.

Re (new) claims 20

Examiner disagrees.

Younis teaches a first threshold (upper threshold) and a second threshold (lower threshold), where the first threshold (upper threshold) is greater than a second threshold (lower threshold) (col. 23 lines 10-15). The dynamic range threshold is enabled and disabled based on the upper and lower threshold (col. 23 lines 15-25).

Re (new) claims 21

Examiner agrees the cited references do not teach the features of new claim 21.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1,2,4-7,9,10,12-15,18,19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brueske et al. US, 6,670,901 in view of Younis et al. US, 6,134,430.

Re claim 1, discloses in a spread-spectrum receiver (fig.3), a method for processing a received analog spread-spectrum signal comprising:

determining whether to attenuate the received analog spread-spectrum signal (col. 3 lines 65 to col. 4 lines 10);

based on the attenuation determination, selectively attenuating the received

analog spread-spectrum signal to generate a selectively attenuated analog spread-spectrum signal (col. 4 lines 22-33);

digitizing the selectively attenuated analog spread-spectrum signal to generate a digital spread-spectrum signal (col. 4 lines 39-45) and;

filtering (digital filters (fig.3 323,325)) the digital spread-spectrum signal in an attempt to compensate for interference in the received analog spread-spectrum signal to generate a filtered digital spread-spectrum signal (col. col. 4 lines 63-67), does not teach de-spreading the filtered digital spread-spectrum signal.

However, Younis discloses a digital signal processor for de-spreading the filtered digital spread-spectrum signal to generate a de-spread digital signal, wherein the attenuation determination is based on the amplitude of the digital spread-spectrum signal prior to the interference-compensation filtering and the de-spreading (col. 4 lines 42-44).

Therefore, taking the combined teaching of Brueske and Younis as a whole would have been rendered obvious to one skilled in the art to modify Brueske to utilize a digital signal processor as despreader for the benefit of yielding the desired signal.

Re claim 2, the modified invention as claimed in claim 1, wherein the filtering attempts to compensate for off-channel interference in the received analog spread-spectrum signal (col. 4 lines 63 to col. 5 line 4; the digital filters (323,325) further attenuate the (I,Q) channels to compensate for the off-channel Interference, "Brueske").

Re claim 4, the modified invention as claimed in claim 1, wherein:

the received analog spread-spectrum signal is attenuated when the amplitude of the digital spread-spectrum signal is greater than an upper threshold, the received analog spread-spectrum signal is not attenuated when the amplitude of the digital spread-spectrum signal is less than a lower threshold, wherein the upper threshold is greater than the lower threshold (col. 4 lines 46-60 and col. 23 lines 9-23,"Younis"; the attenuator (fig. 2 (1216)) attenuates the amplitude of the input signal based on the ADC signal. The dynamic range threshold is enabled and disabled based on the upper and lower threshold).

Re claim 5, the modified invention as claimed in claim 4, wherein the upper threshold is greater than the lower threshold by an amount greater than the level of selective attenuation in order to provide hysteresis in the attenuation determination (col. 22 lines 50 to col. 23 lines 9-23,"Younis" (fig.11); Younis teaches upper threshold and lower threshold and the dynamic range threshold with the hysteresis to prevent toggling. With 6 dB hysteresis, when the threshold exceeds 51 dB loop (110a) is enabled and when the threshold is below 45dB is disabled).

Re claim 6, the modified invention as claimed in claim 1, wherein:

the received analog spread-spectrum signal is a radio frequency (RF) signal; and further comprising:

converting the RF signal to an intermediate frequency (IF) prior to the digitization (col. 6 lines 34-38," Younis"); and converting the IF signal to baseband after digitization (col. 4 lines 4-14,"Younis").

Re claim 7, the modified invention as claimed in claim 6, wherein the filtering and

the de-spreading are implemented at baseband (fig.4 (1250; demodulator), col. 7 lines 50-55," Younis").

Re claim 9, discloses in a spread-spectrum receiver (fig.3), a method for processing a received analog spread-spectrum signal comprising:

A variable attenuator (LNA/VGA) adapted to attenuate the received analog spread-spectrum signal (col. 3 lines 65 to col. 4 lines 10);

an analog-to-digital converter (ADC (fig.3 (A/D (319,321)) adapted to digitize the selectively attenuated analog spread-spectrum signal to generate a digital spread-spectrum signal (col. 4 lines 39-45);

An interference-compensation filter (digital filters (fig.3 323,325)) adapted to filter the digital spread-spectrum signal in an attempt to compensate for interference in the received analog spread-spectrum signal to generate a filtered digital spread-spectrum signal (col. col. 4 lines 63-67).

A controller (AGC control (307)) adapted to control the variable attenuator based on the amplitude of the digital spread-spectrum signal prior to the interference-compensation filter (controller (AGC (307)) that adjusts dynamically (variable attenuator) the output signals (I and Q) from the (A/D) converter (319 and 321) before the digital filters (323,325) col. 4 lines 41-44),does not teach digital processor adapted to de-spread the filtered digital spread-spectrum signal.

However, Younis discloses a digital signal processor for de-spreading the filtered digital spread-spectrum signal to generate a de-spread digital signal, wherein the attenuation determination is based on the amplitude of the digital spread-spectrum

signal prior to the interference-compensation filtering and the de-spreading (col. 4 lines 42-44).

Therefore, taking the combined teaching of Brueske and Younis as a whole would have been rendered obvious to one skilled in the art to modify Brueske to utilize a digital signal processor as despreader for the benefit of yielding the desired signal.

Re claim 10, the modified invention as claimed in claim 9, wherein the filtering is adapted to attempt to compensate for off-channel interference in the received analog spread-spectrum signal (col. 4 lines 63 to col. 5 line 4; the digital filters (323,325) further attenuate the (I,Q) channels to compensate for the off-channel Interference,"Brueske").

Re claim 12, the modified invention as claimed in claim 9, wherein:
the controller (fig. 2 (1260;AGC control circuit) is adapted to control the variable attenuator to attenuate the received analog spread-spectrum signal when the amplitude of the digital spread-spectrum signal is greater than an upper threshold The controller (fig. 2 (1260; AGC control circuit) is adapted to control the variable attenuator not to attenuate the received analog spread-spectrum signal when the

amplitude of the digital spread-spectrum signal is less than a lower threshold, wherein the upper threshold is greater than the lower threshold (col. 4 lines 46-60 and col. 23 lines 9-23,"Younis"; the attenuator (fig. 2 (1216)) attenuates the amplitude of the input signal based on the ADC signal. The dynamic range threshold is enabled and disabled based on the upper and lower threshold).

Re claim 13, the modified invention as claimed in claim 12, wherein the upper threshold is greater than the lower threshold by an amount greater than the level of

selective attenuation in order to provide hysteresis in the attenuation determination (col. 22 lines 50 to col. 23 lines 9-23,"Younis" (fig.11); Younis teaches upper threshold and lower threshold and the dynamic range threshold with the hysteresis to prevent toggling. With 6 dB hysteresis, when the threshold exceeds 51 dB loop (110a) is enabled and when the threshold is below 45dB is enabled).

Re claim 14, the modified invention as claimed in claim 9, wherein:

the received analog spread-spectrum signal is a radio frequency (RF) signal; and further comprising:

mixer adapted to convert the RF signal to an intermediate frequency (IF) prior to the digitization (col. 6 lines 34-38," Younis"); and a digital downconverter (fig.4 (1414a and 1414b) adapted to convert the IF signal to baseband after digitization (col. 7 lines 42-46,"Younis").

Re claim 15, the modified invention as claimed in claim 14, wherein the filtering and the digital processor are implemented at baseband (fig.4 (1250; demodulator), col. 7 lines 9-20," Younis").

Re claim 18, the modified invention as claimed in claim 1, wherein the attenuation determination is based on the amplitude of the digital spread-spectrum in a time domain (the application's specification para#40 discloses that "the conversion from the RF to baseband could be implemented in a single step, in either the analog or digital domain. By definition the time domain is in analog or digital domain or its original frequency. (col. 7 lines 9-20,"Younis").

Re claim 19, the modified invention as claimed in claim 6, wherein the attenuation determination is based on the amplitude of digital IF signal (col. 4 lines 40-44,"Younis"; the ADC converts the IF signal into IF sampled digital signal and the amplitude is attenuated based on the IF sampled digital signal).

Re claim 4, the modified invention as claimed in claim 1, wherein:

the received analog spread-spectrum signal is attenuated when the amplitude of the digital spread-spectrum signal is greater than an first threshold (upper threshold) (col. 4 lines 55-59), the received analog spread-spectrum signal is not attenuated when the amplitude of the digital spread-spectrum signal is less than a second threshold (lower threshold) (col. 23 lines 14-17, the loop is disabled when the dynamic range falls below 45dB (lower threshold), wherein the first threshold (upper threshold) is greater than the (second threshold) lower threshold (col. 4 lines 46-60 and col. 23 lines 9-23,"Younis"; the attenuator (fig. 2 (1216)) attenuates the amplitude of the input signal based on the ADC signal. The dynamic range threshold is enabled and disabled based on the upper and lower threshold).

a transition (enabling or disabling state, col. 23 lines 10-12) from the received analog spread-spectrum signal not being attenuated to the received analog spread-spectrum signal being attenuated occurs after the amplitude of the digital spread-spectrum signal is greater than the first threshold for a first specified amount of time (col. 23 lines 13-15) and a transition (enabling or disabling state, col. 23 lines 10-12) from the received analog spread-spectrum signal being attenuated to the received analog spread-spectrum signal not being attenuated occurs after the amplitude of the

digital spread-spectrum signal is less than the second threshold for a second specified amount of time (col. 23 lines 13-15), does not explicitly teach the amplitude of the digital spread-spectrum signal is greater than the first threshold for a first specified amount of time and the amplitude of the digital spread-spectrum signal is less than the second threshold for a second specified amount of time.

Instead, Younis discloses the dynamic range is selected with respect to attenuation on the basis of hysteresis which required timing. The dynamic range is furthermore selected based on other numerous considerations (for example, statistics input of the RF input, table 1-3, col. 21 lines 35-55).

Therefore, it would have been rendered obvious to one skilled in the art to use Younis's dynamic range selection for the benefit of minimizing power consumption.

Re claim 5, the modified invention as claimed in claim 4, wherein the upper threshold is greater than the lower threshold by an amount greater than the level of selective attenuation in order to provide hysteresis in the attenuation determination (col. 22 lines 50 to col. 23 lines 9-23,"Younis" (fig.11); Younis teaches upper threshold and lower threshold and the dynamic range threshold with the hysteresis to prevent toggling. With 6 dB hysteresis, when the threshold exceeds 51 dB loop (110a) is enabled and when the threshold is below 45dB is disabled).

Allowable Subject Matter

5. Claims 3, 8, 11, 16,17,21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rahel Guarino whose telephone number is 571-270-1198. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Payne David can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RG

/David C. Payne/

Supervisory Patent Examiner, Art Unit 2611